

Name: _____ PID: _____

TA: _____ Sec. No: _____ Sec. Time: _____

Math 10A.
Midterm Exam 2
November 13, 2006

Turn off and put away your cell phone.

You may use any type of calculator, but no other electronic devices during this exam.

You may use one page of notes, but no books or other assistance during this exam.

Read each question carefully, and answer each question completely.

Show all of your work; no credit will be given for unsupported answers.

Write your solutions clearly and legibly; no credit will be given for illegible solutions.

If any question is not clear, ask for clarification.

1. (4 points) Let $f(x) = \frac{1}{x^2 + 12}$.

(a) Compute $f''(x)$.

(b) On what interval(s) is the graph of f concave down?

#	Points	Score
1	4	
2	6	
3	6	
4	4	
Σ	20	

2. (6 points) The temperature, T , in degrees Fahrenheit, of a cold yam placed in a hot oven is given by $T = f(t)$, where t is the time in minutes since the yam was put in the oven.

(a) What is the sign (positive or negative) of $f'(t)$? Why?

(b) What are the units of $f'(24)$?

(c) What is the practical meaning of the statement $f'(24) = 3$?

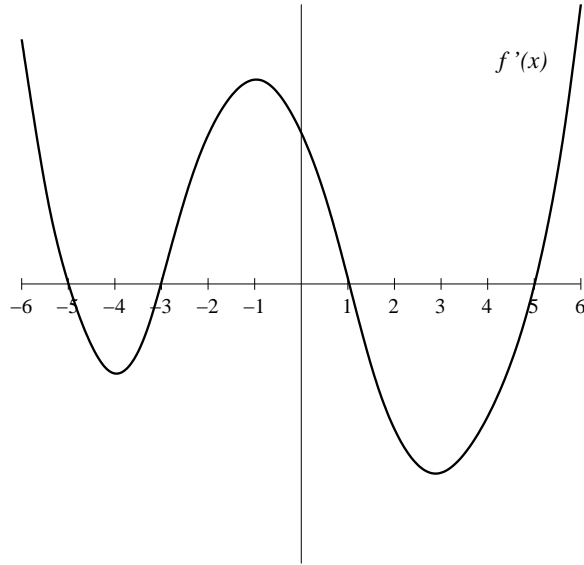
3. (6 points) Compute the derivative of the following functions.

(a) $f(x) = \frac{3 \tan(x) - 1}{\cos(x)}$

(b) $g(x) = \sqrt{6x + 7 \sin(x)}$

(c) $h(x) = x^3 e^{-x}$

4. (4 points) The graph of the *derivative* of f is given below.



(a) On which interval(s) is the graph of f concave down?

(b) On which interval(s) is the graph of f concave up?

(c) On which interval(s) is the function f decreasing?

(d) On which interval(s) is the function f increasing?